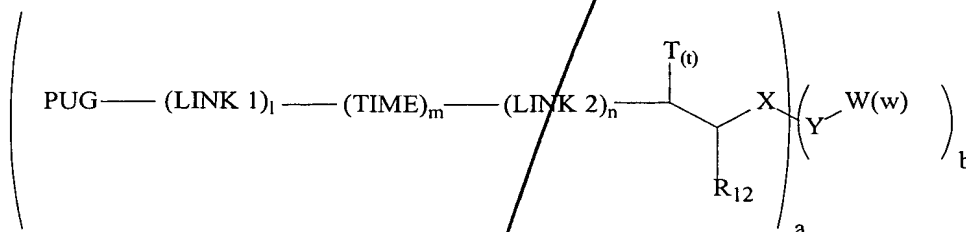


**WHAT IS CLAIMED IS:**

1. An imaging element comprising an imaging layer having associated therewith a compound of Structure I:



wherein:

PUG is a photographically useful group;

LINK 1 and LINK 2 are linking groups;

TIME is a timing group;

l is 0 or 1;

m is 0, 1, or 2;

n is 0 or 1;

Y is C, N, O or S;

X is a substituted or unsubstituted aryl group or an electron-withdrawing group;

W is hydrogen, halogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group, or W can combine with T or R<sub>12</sub> to form a ring, w is 0 to 3 when Y is C, w is 0-2 when Y is N, and w is 0-1 when Y is O or S, when w is 2, the two W groups can combine to form a ring, and when w is 3, two W groups can combine to form a ring or three W groups can combine to form an aryl group or a bicyclic substituent;

R<sub>12</sub> is hydrogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group or R<sub>12</sub> can combine with T to form a ring;

T is a substituted or unsubstituted alkyl cycloalkyl, aryl or six-membered heterocyclic group, t is 0, 1, or 2, with the proviso that when X is a cyano or sulfono group, t is 1 or 2, when t is 2, the two T groups can combine to form a ring;

a is 1 or when X is divalent a is 1 or 2; and

b is 1 when X is divalent and 0 when X is monovalent.

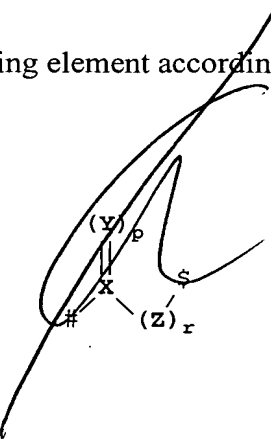
2. An imaging element according to claim 1, wherein PUG is a coupler, development inhibitor, bleach accelerator, bleach inhibitor, inhibitor releasing developer, dye precursor, developing agent, silver ion fixing agent, electron transfer agent, silver halide solvent, silver halide complexing agent, reductone, image toner, pre-processing or post-processing image stabilizer, hardener, tanning agent, fogging agent, ultraviolet radiation absorber, nucleator, chemical or spectral sensitizer, desensitizer, surfactant, or precursors thereof.

3. An imaging element according to claim 2, wherein PUG is a developer.

4. An imaging element according to claim 3, wherein the developer is an aminophenol, phenylenediamine, hydroquinone, pyrazolidinone, or hydrazine.

5. An imaging element according to claim 4, wherein the developer is a phenylenediamine.

6. An imaging element according to claim 1, where LINK is of Structure II:



II

wherein

X represents carbon or sulfur;

Y represents oxygen, sulfur or N-R<sub>1</sub>, where R<sub>1</sub> is substituted or unsubstituted alkyl or substituted or unsubstituted aryl;

p is 1 or 2;

Z represents carbon, oxygen or sulfur;

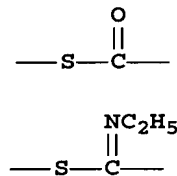
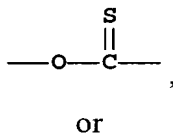
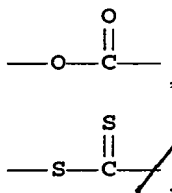
r is 0 or 1;

with the proviso that when X is carbon, both p and r are 1, when X is sulfur, Y is oxygen, p is 2 and r is 0;

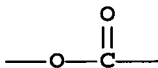
# denotes the bond to PUG (for LINK 1) or TIME (for LINK 2);

\$ denotes the bond to TIME (for LINK 1) or T<sub>(0)</sub> substituted carbon (for LINK 2).

7. An imaging element according to claim 6, where LINK 1 and LINK 2 are the following:



8. An imaging element according to claim 7, wherein LINK 1 is

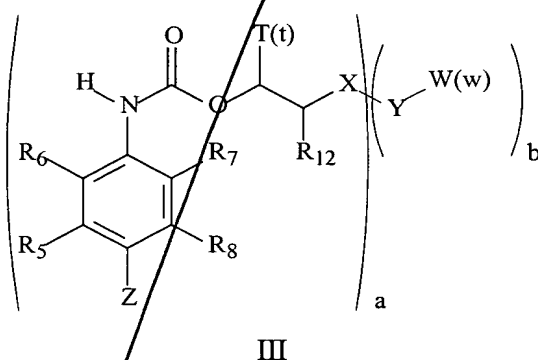


9. An imaging element according to claim 1, wherein TIME is a timing group selected from (1) groups utilizing an aromatic nucleophilic substitution reaction; (2) groups utilizing the cleavage reaction of a hemiacetal; (3)

groups utilizing an electron transfer reaction along a conjugated system; or (4) groups using an intramolecular nucleophilic substitution reaction.

10. An imaging element according to claim 1, wherein m is 0 and n is 0.

11. An imaging element according to claim 1, wherein the compound of Structure I is of Structure III:



wherein:

Z is OH or  $\text{NR}_2\text{R}_3$ , where  $\text{R}_2$  and  $\text{R}_3$  are independently hydrogen or a substituted or unsubstituted alkyl group or  $\text{R}_2$  and  $\text{R}_3$  are connected to form a ring;

$\text{R}_5$ ,  $\text{R}_6$ ,  $\text{R}_7$ , and  $\text{R}_8$  are independently hydrogen, halogen, hydroxy, amino, alkoxy, carbonamido, sulfonamido, alkylsulfonamido or alkyl, or  $\text{R}_5$  can connect with  $\text{R}_3$  or  $\text{R}_6$  and/or  $\text{R}_8$  can connect to  $\text{R}_2$  or  $\text{R}_7$  to form a ring;

T is a substituted or unsubstituted alkyl cycloalkyl, aryl or six-membered heterocyclic group, t is 0, 1, or 2, with the proviso that when X is a cyano or sulfono group, t is 1 or 2, when t is 2, the two T groups can combine to form a ring;

$\text{R}_{12}$  is hydrogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group or  $\text{R}_{12}$  can combine with T or W to form a ring;

X is a substituted or unsubstituted aryl group or an electron-withdrawing group;

Y is C, N, O or S;

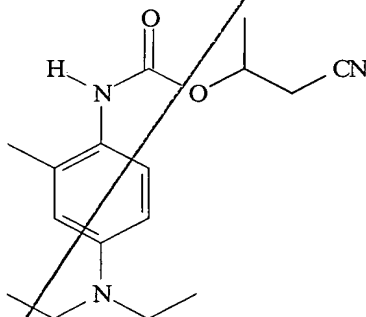
a is 1 when X is monovalent and 1 or 2 when X is divalent;

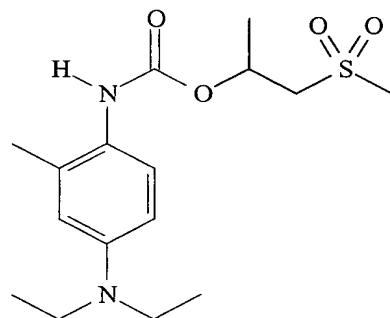
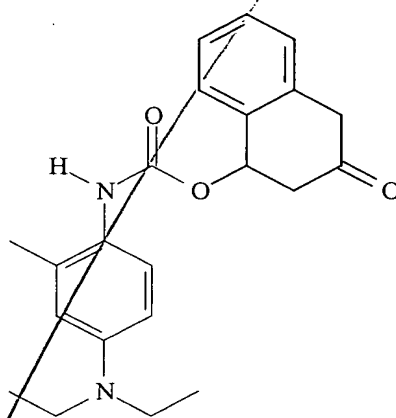
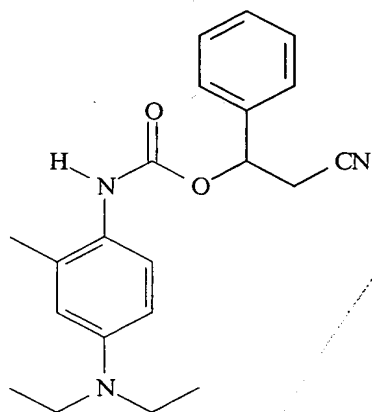
b is 0 when X is monovalent and 1 when X is divalent;

W is hydrogen, halogen, or a substituted or unsubstituted alkyl, cycloalkyl, aryl or heterocyclic group, or W can combine with T to form a ring, w is 0 to 3 when Y is C, w is 0-2 when Y is N, and w is 0-1 when Y is O or S, when w is 2, the two W groups can combine to form a ring, and when w is 3, two W groups can combine to form a ring or three W groups can combine to form an aryl group or a bicyclic substituent.

12. An imaging element according to claim 11, wherein X is a sulfonyl or a cyano group and Z is  $\text{NR}_2\text{R}_3$ .

13. An imaging element according to claim 11, wherein the compound of Structure III is of the formula:

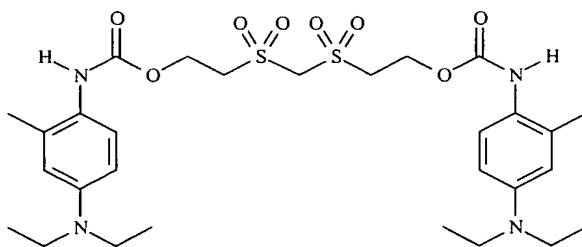
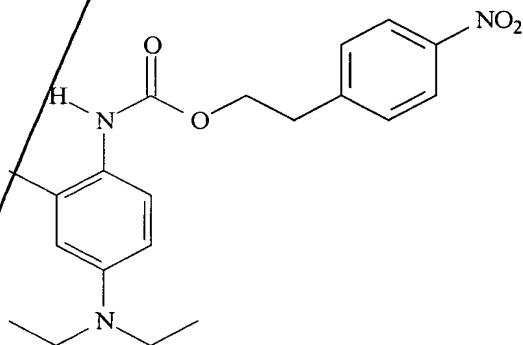
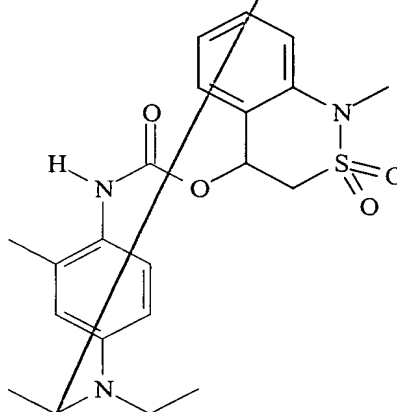
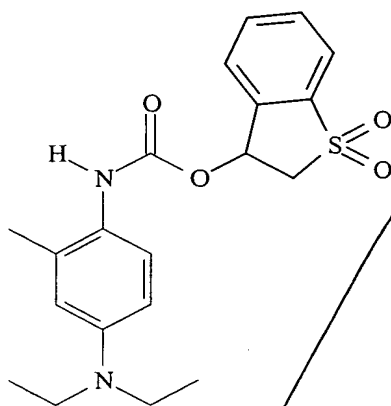




C3  
cat

09475703-13099

C3 add



0347503-13052460

14. An imaging element according to claim 1 which is a photothermographic element.
15. An imaging element according to claim 14, wherein the photothermographic element contains an imaging layer comprising a light sensitive silver halide emulsion, a non-light sensitive silver salt oxidizing agent and a reducing agent.
16. An imaging element according to claim 1, which is a photographic element.
17. An imaging element according to claim 16, wherein the photographic element contains an imaging layer comprises a silver halide emulsion.
18. An imaging element according to claim 1 which is a thermographic element.
19. An imaging element according to claim 18, wherein the thermographic element contains an imaging layer comprising a non-light sensitive silver salt oxidizing agent and a reducing agent.
20. An imaging element according to claim 1, wherein the compound of Structure I is in the imaging layer.
21. A method of image formation comprising the step of developing an imagewise exposed imaging element according to claim 1.
22. A method according to claim 21, wherein said developing comprises treating said imagewise exposed element at a temperature between

about 90 °C and about 180 °C for a time ranging from about 0.5 to about 60 seconds.

23. A method according to claim 21, wherein said developing comprises treating said imagewise exposed element to a volume of processing solution is between about 0.1 and about 10 times the volume of solution required to fully swell the photographic element.

24. A method according to claim 21, wherein the developing is accompanied by the application of a laminate sheet containing additional processing chemicals

25. A method according to claim 24, wherein the developing is conducted at a processing temperature between about 20 °C and about 100 °C.

26. A method according to claim 23, wherein the applied processing solution is a base, acid, or pure water.

27. A method of claim 21, wherein said developing comprises treating said imagewise element with a conventional photographic processing solution.

28. A method of image formation comprising the step of scanning and imagewise exposed and developed imaging element according to claim 1 to form a first electronic image representation of said imagewise exposure.

29. A method of scanning an image according to claim 28, wherein scanning is accomplished with a diffuse illumination source.

30. A method of scanning an image according to claim 29, wherein diffusion of the illumination source is accomplished by reflective means.

31. A method of scanning an image according to claim 29, wherein diffusion of the illumination source is accomplished by the use of an optical element containing a material known to diffuse light.

32. A method of image formation comprising the step of digitizing a first electronic image representation formed from and imagewise exposed, developed, and scanned imaging element formulated according to claim 1 to form a digital image.

33. A method of image formation comprising the step of modifying a first electronic image representation formed from and imagewise exposed, developed, and scanned imaging element formulated according to claim 1 to form a second electronic image representation.

34. A method according to claim 33, wherein said first electronic image representation is a digital image.

35. A method of image formation comprising storing, transmitting, printing, or displaying an electronic image representation of an image derived from an imagewise exposed, developed, scanned imaging element formulated according to claim 1.

36. A method according to claim 35, wherein said electronic image representation is a digital image.

37. A method according to claim 35, wherein printing the image is accomplished with any of the following printing technologies:

Electrophotography;

Inkjet;

Thermal dye sublimation; or

CRT or LED printing to sensitized photographic paper.

38. A method of image formation comprising the use of an imaging element according to claim 1 in a one-time-use camera.

39. A method according to claim 38, wherein the one-time use camera further comprises a heating stage suitable for thermally developing an imagewise exposed element.

40. A method of image formation comprising the step of thermally processing an imagewise exposed element formulated according to claim 1 in a one-time-use camera having a heater stage.

41. A method of image formation comprising the steps of:  
thermally developing an imagewise exposed photographic element having a heteroaromatic moiety that enables release of a photographically useful group on thermal activation to form a developed image;

scanning said developed image to form a first electronic image representation from said developed image;

digitizing said first electronic record to form a digital image;

modifying said digital image to form a second electronic image representation; and

storing, transmitting, printing or displaying said second electronic image representation.

Add B4  
Add C5  
Add D4